

Citizens Advisory Task Force Comments
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Submitted by Ed Anderson

JPA Section 7.4.6 p 422-423, and Environmental Supplement Section 3.2.5 III-43

Risk to Human Health and Ecology: These appear to be the only sections that deal with risks to human health. These few pages refer to an Air Emissions Risk Assessment (AERA) and Risk Assessment Screening Spreadsheet (RASS), and describe the carcinogenic and non-carcinogenic hazard indices for air emissions and fish (mercury) ingestion.

This section makes no mention of the Regional Modeling System for Aerosols and Deposition (REMSAD) analysis used by the EPA. REMSAD modeling was previously described in a report submitted by Excelsior Energy to the MPUC. The final draft of this study is entitled *Air Quality and Health Benefits Modeling: Relative Benefits Derived from Operation of the MEP-I/II IGCC Power Station* and was prepared by ICF consulting for Excelsior Energy December 14, 2005.

This report should be included in the JPA as air quality and health impacts are of significant local concern, and the information is missing from the JPA. The following issues should be addressed by Excelsior Energy:

1. The above referenced study was prepared modeled for the West Range Site. *Provide similar modeling for the East Range Site.*
2. The “health benefits” modeled are compared to a Super Critical Pulverized Coal Plant in Central Minnesota. Placing the modeled SCPC plant near a higher density population makes the expected health implications appear to have a substantially greater impact (and thus MEP would have a greater “benefit”) than would otherwise be the case. *The modeling should compare health risk of both plants in the same location in order to assess the actual differences in adverse air quality and health impact.*
3. A SCPC plant would not be the only alternative to IGCC. *If the air emission and health impact comparison between IGCC and SCPC is to be made, the company should also model other forms of power production including alternative energy sources, especially given that this project is labeled an innovative energy project and has received renewable energy funding.*
4. REMSAD modeling uses PM2.5, not PM10 (emissions of approximately 440 tons/year) as is listed in the emissions data of the JPA. With regard to particulates, PM2.5 is thought to have the most significant adverse impact on human health. *What are the average and maximum emissions of PM 2.5 from MEP I/II? Give data for both East and West Range Sites.*

5. Chapter three of this study indicates that individuals with asthma, COPD (emphysema), chronic bronchitis, and heart disease are at greatest risk from particulates. “There will be a measurable effect on air quality up to 70-80 km from the plant,... and a peak effect near the plant location with lesser impacts surrounding the plant in all directions.” “Areas with higher proportions of older residents will have higher estimated risks owing to their higher ‘background’ mortality risks.

A. The company should describe the specific increase in health risk for people in nearby communities as well as individuals with co-morbidities and the elderly.

B. In addition, the company should address health impacts/risk for Native American elders with regard to the senior housing facility and interpretative center planned just off Hwy 169 near the Scenic Highway.

6. Compared to a hypothetical SCPC plant, the Mesaba Energy Project is expected to result in 1.5 fewer deaths per year in Minnesota for phase I, and 6.4 fewer deaths nationally. The report assumes doubling of this death rate in phase II. The information appears to indicate that MEP I/II would be responsible for 10.7 deaths nation wide, with 24% of those deaths occurring in Minnesota. Additionally, the report states that “It can be seen that mortality risks associated with the IGCC Power Station are both somewhat lower and more concentrated around the facility than the estimated risks associated with the Alternative SCPC plant”.

The company should quantify the “somewhat lower and more concentrated” risk in the area around the facility, and how this risk increases for nearby residences and municipalities.

7. The study is modeled on the original stack height. The current planned stack height has been lowered by about 100 ft for “aesthetic reasons” according to the Baxter testimony to the MPUC. ***Describe the aesthetic improvement for both the stack and the emissions plume, and contrast this with the increase in adverse local air quality and health impacts.***

8. Morbidity (non-fatal health effects) related to particulate matter are described in the ICF Consulting study. Data is given for morbidity related to PM2.5 (cases per year in Minnesota) including:

Acute bronchitis	1.6
Non-fatal MI (heart attack)	1.9
Asthma exacerbation	100
ER visits for asthma	1.3
Lower respiratory illness	19
Minor restricted activity days	791
Work loss days	18,313

The company should:

A. Give the range expected for these morbidities in a given year, and adjust for seasonal variation.

B. Give the expected number and range of clinic or urgent care visits, and factor this in to projected costs both to the State, and to local health care facilities and health insurance plans such as Itasca Medical Care (IM Care).

C. Explain the apparent discrepancy between low numbers of minor respiratory illness, significant number of minor restricted activity days, and the seemingly out of proportion number of work loss days.

D. Describe the cost of these 18,000 work loss days to the average family affected, as well as the affect on employers needing to cover for sick workers.

9. Secondary formation of particulate matter can have a significant impact on human health.

A. The JPA should address air quality modeling and adverse health consequences, both local and regional, with regard to secondary particulates.

B. Provide similar analysis of secondary particulate matter health impacts for the general population, individuals with co-morbidities, and the elderly.

10. Ground level ozone health concerns and formation of smog need to be addressed by Excelsior Energy. Nitrous oxides contribute to formation of secondary particulate matter, and also play a major role in formation of ground level ozone. Volatile organic compounds (VOC) and nitrous oxides (NO_x) combine in the presence of light and heat to form ozone. The Minnesota Department of Health indicates ozone exposure can lead to respiratory infections and inflammation and that one third of healthy adults are sensitive to the effects of ozone.

The Minnesota Department of Health also states that on hot sunny days, ozone concentrations can rise to unhealthy levels, and ozone transport can cause elevated levels in rural areas. MEP I/II will emit approximately 2700 tons of NO_x/yr and 152 tons of VOC/yr. Because this will increase levels of ground level ozone, Excelsior Energy should address the following:

A. Estimate the increase in risk for developing childhood asthma

B. Estimate risk attributable to ozone exposure for people with co-morbidities, including children, individuals with lung disease, and the elderly. Provide details on average risk as well as risk on hot sunny days.

C. Estimate the health risk for healthy individuals and children exercising outdoors on hot sunny days.

11. The Excelsior commissioned study indicates that 7,780 women of child-bearing age reside in the mercury deposition impact zone of MEP I. The phase I mercury impact zone encompasses 720 lakes in which 487,000 fish are harvested. The company should:

A. Provide a clear detailed analysis of how lakes in this impact zone will be affected by additional mercury deposition.

B. Provide details and analysis of this plant's mercury speciation. Clearly chart/graph the local lake impact over time given emissions of elemental mercury, methyl-mercury, and secondary methylation of elemental mercury.

C. Provide information regarding which of these 720 lakes have been tested and how many have fish consumption advisories for mercury.

D. Provide details of health risk analysis for women of childbearing age who live in this mercury impact zone.

12. The Excelsior commissioned study states "Recent research has indicated that low-level chronic exposure to methyl-mercury via fish consumption may be linked with a higher risk of serious cardiovascular impacts in men, including MI, coronary artery disease, and other cardiovascular disease." *Estimate the public's adverse health risk given increasing mercury concentrations over time with respect to the MEP.*

JPA Environmental Supplement Section 3.4 Water resources

Section 3.4.1.1F describes the possibility of reducing water levels of the Canisteo Mine Pit under conditions of extreme drought to the point where land bridges would be exposed.

How would exposing land bridges affect the availability of process water?

How low would water levels need to drop before affecting the function and capacity of the pump stations and caisson intake?

How much of a drop in surface level is "significant"?

Are there any other competing uses for the process water that may make this situation more likely?

Exposing land bridges would provide a smaller volume of water into which the cooling tower blowdown would discharge, increasing concentrations of mercury, hardness, total dissolved solids, etc at a faster rate. *Describe and graph how this would be anticipated to occur at such surface water levels, as well as the long term plan to deal with this situation.*

Provide details of how the addition of Zero Liquid Discharge on the cooling tower blowdown at the West Site would affect the availability of process water with regard to total water use needs. The addition of ZLD is necessary at the West Site to prevent

pollution of Canisteo Lake and the future reality of dealing with these polluted waters when the MEP is no longer operational.

JPA Environmental Supplement Section 3.4 Water resources: Section 3.4.4 p III-117 West range site. This page states, “There is the potential to impact municipal water supply wells within the cities of Marble and Calumet as a result of significantly reducing the water levels in the HAMP”.

1. The company should provide details of how such impacts will be prevented and at what reduction of water levels is it possible that this will occur. If this situation does occur, how will the company and municipalities be affected and deal with this situation?

2. In this situation, how such water level reductions or even lesser reductions of water levels affect Coleraine and Bovey water supplies as these wells are not nearly as deep, and may receive recharge from more superficial layers above the ore body?

The Joint Permit Application is incomplete in that it does not address the cumulative environmental and socio-economic impacts related to the planned MSI direct reduction steel mill scheduled to be built just north of the proposed West Range Site.